

What Is Claimed Is:

1. A device for controlling fluid flow between an evaporative emission space of a fuel tank and a fuel vapor collection canister, the device comprising:

a housing including a first port, a second port, and a fluid flow path extending between the first and second ports, the first port being adapted for receiving fluid flow from the evaporative emission space and being at a first pressure level, and the second port being adapted for supplying fluid flow to the fuel vapor collection canister and being at a second pressure level;

a valve movable along an axis with respect to the housing between a first configuration, a second configuration, and an intermediate configuration between the first and second configurations, the first configuration permitting substantially unrestricted fluid flow between the first and second ports, and the second configuration substantially preventing fluid flow between the first and second ports;

a seal being located at an interface between the housing and the valve, the seal including an annular lip projecting obliquely with respect to the axis in the first configuration of the valve;

an electric actuator being disposed within the housing and operatively coupled to the valve element;

an electric transducer being disposed within the housing and in fluid communication with the fluid flow path, the electric transducer sensing the first pressure level; and

an electrical connector being disposed on the housing, the electrical connector including a first set of terminals in electrical communication with the electric actuator and including a second set of terminals in electrical communication with the electric transducer.

2. The device according to claim 1, wherein the electrical connector comprises a third terminal in common electrical communication with both the electric actuator and the electric transducer.

3. The device according to claim 1, wherein the electric transducer provides a first electric signal used in controlling the electric actuator.

09923789-080801

5/2/05

- 09923789 "080801
T0800" 682E2560
4. The device according to claim 3, wherein the first electric signal comprises a feedback signal.
5. The device according to claim 3, wherein the first pressure level comprises a negative pressure relative to ambient, and the first electric signal is provided to a first subset of the second set of terminals.
6. The device according to claim 5, wherein the electric transducer provides a second electric signal adapted to indicate a rollover condition of the fuel tank.
7. The device according to claim 6, wherein the first pressure level comprises a positive pressure relative to ambient, and the second electric signal is provided to a second subset of the second set of terminals.
8. The device according to claim 7, wherein the first and second subsets comprise in common at least one of the second set of terminals.
9. The device according to claim 1, wherein the electric actuator comprises an electromagnetic solenoid.
10. The device according to claim 1, wherein the seal comprises a hollow frustum including an inner surface, an outer surface, and a tip disposed between the inner and outer surfaces, the inner surface being in fluid communication with the first port when the tip contacts the housing, and the outer surface being in fluid communication with the second port when the tip contacts the housing.
11. The device according to claim 1, further comprising:
a first resilient element biasing the valve toward the first configuration.
12. The device according to claim 1, wherein the valve comprises:
a first valve element including at least one orifice, the at least one orifice providing the restricted fluid flow between the first and second ports; and
a second valve element positionable between first and second arrangements with respect to the first valve element, the first arrangement of the second valve being spaced from

the first valve element in the intermediate configuration, and the second arrangement of the second valve engaging the first valve element in the second configuration.

13. The device according to claim 12, further comprising:
a first resilient element biasing the valve toward the first configuration; and
a second resilient element biasing the first and second valve members toward the first arrangement.

14. The device according to claim 13, wherein the second resilient element comprises a greater biasing force than the first resilient element

15. The device according to claim 13, wherein the first and second resilient elements comprise coil springs having coincidental central axes.

16. The device according to claim 1, wherein the seal in the intermediate configuration deforms in response to a differential between the first and second pressure levels.

17. A method of connecting a device for controlling fluid flow between an evaporative emission space of a fuel tank and a fuel vapor collection canister, the fuel tank and the fuel vapor collection canister being mounted on a vehicle including fluid conduits and an electric wiring harness, the method comprising:

mounting a housing of the device on the vehicle;
establishing a first fluid communication connection between the device and the evaporative emission space of the fuel tank;
establishing a second fluid communication connection between the device and the fuel vapor collection canister; and
establishing a single electrical connection between the wiring harness and both of a valve actuator and a pressure regulator that are commonly disposed within the housing of the device.